DOCUMENT RESUME

ED 031 891 EF 002 713

By-Grant, P.L.

The Television Iceberg.

Pub Date 4 May 67

Note-9p.; Speech presented at the NAPPA Annual Meeting (54th, Universite de Montreal, Quebec, Canada, April 30-May 5, 1967)

EDRS Price MF-$0.25 HC-$0.55

Descriptors-Audiovisual Instruction, Closed Circuit Television, Construction Programs, *Costs, *Educational Administration, Instructional Media, *Instructional Television, *Planning, *Televised Instruction, Television Teachers

Identifiers-NAPPA, Natl Assn Physical Plant Administrators of Univ

This presentation is concerned with television as it relates to the planning and administration of facilities in which it is utilized. The role of television as a teaching aid, teaching medium, and teacher is discussed. Consideration is given to the following aspects concerned with implementing educational television: plant layout, amount of space required, costs, and number of personnel necessary for both operation of the equipment and administration and maintenance of the facilities. Audience reactions to the presentation are included. (FS)

ED031891

THE TELEVISION ICEBERG

By P. L. Grant, N. J. Pappas & Associates.

INTRODUCTION

LINK: $7,524,590,000

In preparing for this morning, I came across this figure which astounded me - to say the least. This figure relates directly to you - and your Association - in that it is the estimate of the dollars spent on new plant for Universities and Colleges between 1961 and 1965, in the United States.

The estimates from 1965 to 1975 are conservatively stated at $10,000,000,000 and some of you will be involved in the planning and subsequent administrating of these future facilities. Somewhere in that $10,000,000,000 there are teaching aids, which will have to be planed for. And even in existing plants, certain teaching aids will be - if not already - planed for and installed.

There are many such aids: - silent films, film strips, charts, sound films, sound film stages, recordings, tapes, slides, overhead projectors, programmed learning machines, computers, television - but my remarks today will be directed only to the last: Television.

AIM:

Let us, therefore, look at television as it relates to those planning or administrating buildings in which it may be found.

OUTLINE:

We will:

1. Underline the distinction between teaching and learning.
2. Underline the distinction between the teacher and a teaching aid.
3. Show that television can be a) a teaching aid, b) a teaching medium, or c) the teacher extended or delayed.

EF 002 713

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

"PERMISSION TO REPRODUCE THIS COPYRIGHTED MATERIAL HAS BEEN GRANTED BY National Assn. of Physical Plant Administrators of Univ. and Colleges [J.H.SWELTZER] TO ERIC AND ORGANIZATIONS OPERATING UNDER AGREEMENTS WITH THE U.S. OFFICE OF EDUCATION. FURTHER REPRODUCTION OUTSIDE THE ERIC SYSTEM REQUIRES PERMISSION OF THE COPYRIGHT OWNER."

4. Show that the plant requirements depend very much on whether item a, b, or c, television is to be.

5. Present one way of initiating the planning, where television is being considered.

MOTIVATION:

1. Can plant utilization factor be improved?

2. Can the teacher's output be made more effective?

3. Can the students' learning rate be increased?

We will proceed, keeping these questions in mind.

PRESENTATION:

Now knowing that you all represent related specialities within the framework of planning, administrating, and maintaining the physical plant of the "Seats of Higher Learning", here in Canada, and in the United States, I may therefore conclude that there is a common bond which links you together, and that each of you in some way has embraced - or been confronted by - the term Educational Television. This talk, while about Television, is from a slightly different point of view than you might expect from someone technical, for it is precisely the non-technical aspects which represent the iceberg analogy.... the non-technical 90% which lies beneath the surface, and yet influences to such a large degree the characteristics of the whole.

Let us first examine one or two points which are pertinent. Are we all aware of the difference between teaching and learning? - In one of our firm's affiliated endeavors, we underline the statement that you cannot really teach someone, you can only help him learn. The problem of helping someone learn falls to the teacher, and only when that teacher is effective does the student really benefit. The student learns - the teacher helps him learn. The teacher is therefore measurable by the yardstick of instructional effectiveness.

Now I recall that not all the teachers that I came into contact with found it a rewarding task to try and help me learn.

However - stumbling along together, the two of us fashioned some semblance of a finished product.

> As an analyst, however, I am now aware of just how much stumbling there was -- on the part of both of us.
>
> In fact, as an analyst, I now look back and conclude that the only thing I really learned from most of my professors was the necessity of having so to do completely on my own. This today is a great asset, and one which I am sure they were trying to imbue. Overlooked, however, was an important part of someone's obligation - that of introducing me to that aim at the beginning, as I thought we were all strugglin along trying to learn the subject at hand, when in fact there was a far more subtle objective of learning how to learn.

My point here is that there is a vast difference between teaching and learning, and that for the purposes of this talk, the emphasis for our teacher is not to teach, but rather to help to learn, and that the yardstick by which the teacher is measured can only be instructional effectiveness.

Another point is worth making right away. The teacher who is an EFFECTIVE instructor, is not to be confused with technology and teaching aids. An effective instructor can and probably will use teaching aids, but he will be very much aware that they must help his objective, and not be used for the sake of using only. My point here is to distinguish between the teacher, and the teaching aid, and to underscore that the teacher is a primary system - the aid, only a secondary one.

This brings us to the first part of the iceberg. What does television in the classroom qualify as? A teaching aid? A teaching medium? A teacher? - Unfortunately, all three. Unfortunately, that is, for the systems designer, since should he design for one, you may rest assured that the others will still be required. Let us look at this statement a little more closely:

> The object of teaching is to communicate, from someone who knows, to someone who does not. Thus, the learning session should begin with the LINK (back to previous benchmark) move on to the AIM, lay out the OUTLINE (what to expect) and thence on to the PRESENTATION and finally back into the SUMMARY. (We leave out the testing aspect of the learning cycle).
>
> With the man in the classroom, communication is direct, and can be as effective as the man is capable of making it. Usually, the only training aids used will be a blackboard, and a book of reference. A measure of his prowess as a teacher will be the effectiveness he achieves in communicating the knowledge of a particular lesson into the learning apparatus of the student. Intuitively, many people feel that adding a film projector, a slide projector,

or, for that matter, a television screen will make the teacher more effective. If he is an already effective teacher, then this may be so. If he is not, then no amount of training aids will solve this basic problem.

Move on now to the specially prepared material, which can be used in a training medium - special film, or slide sequences, or buildups used in overhead projectors. These represent vehicles, into which has already gone the teaching message, presumably prepared by someone who has been aware of the learning process. These are self-contained communications, made more effective by the added possibility of using the extra dimensions of color, and the advantage of time compression - long preparation, short presentation. The device is no longer simply a teachers aid, but becomes a teaching medium, through which specially prepared communications are presented. The teacher becomes an attendant - until perhaps the summary and testing stage of the lesson.

Finally, the medium can become the teacher, the moment that it records exactly what the teacher did, and extends to other spaces or delays in time. The film medium can do this, but is quite inconvenient. Television does it with ease.

Television therefore can be all three - teaching aid, teaching medium, or teacher. Now, again unfortunately, the basic hardware used in television varies greatly depending on what category is assigned to the role of television. The difference is dictated by the software. And this is the rest of the iceberg. Software is the "programming" which the hardware is expected to be operated with. Curriculum, program sources, materials, teaching approaches - and of course, the decision on what role or combination of roles is to be carried out by the hardware - all influence the physical plant and the administrative structure, necessary to make it an effective part of the educational process.

Let us touch briefly on where one looks for information on Hardware. It is not very difficult to come by, since most manufacturers are more than willing to lay out their product line. Broadcasting is also a well-known arena, whence cometh much information on how and how not to use types of equipment. Again, there is much written in books and in the journals of the day on the basics as they are related to the hardware side.

The software side is a little more difficult to consolidate. The reason - or one of them, - is that here the answers are not all agreed upon yet, and most of the indecision relates to the fact that the educational process itself is in flux. The answers required are to questions such as these:

Do we only want better utilization of our plant?

Use television of normal lectures and extend in other classrooms at same time.

Do we want only better utilization of our teachers?

Use recording, and playback to other classes at other times.

Do we want improved teaching aids?

A small demonstration room for assembling specialized video effects for inclusion into television presentation is in order.

Do we want improved teaching effectiveness through the use of specialized material?

Filmplay and small studio originating centre is recommended, or subscribe to source house for pre-prepared material.

As you may see easily, each level requires a different approach to plant layout, amount of space required, and number of personnel necessary for both operation of the equipment and the administration/maintenance of the facilities.

In developing the requirements where television is being contemplated, the first thing to establish then, is the use to which it will be put. The simplest, and least cost method, is that of extension of the teacher. This involves a minimum of equipment and behind the scene organization. A camera, video tape recorder and television monitors (or rear screen projectors) can then simply accept the teacher, delivering his lecture before an existing class to other classrooms, or to video-tape for later use in the same classroom. This is commonly accepted as the least value method of using the tool, since the range of usefulness is not totally exploited. However, very few additional staff are required. Costs for material, technical producers, studio teachers, graphic artists, and clerical staff are minimized, and the plant utilization factor can be improved, as well as the demands on a teacher's time being substantially reduced.

A simple basic improvement to the use of television in this way comes about when its use as a teaching aid is integrated into the system. The teacher, in addition to extending himself, now brings the presentation of certain available slides and film to the television screen, in order to illustrate his points. Here again, however, we assume that the material to be used could equally as well have been presented by film or slide projectors. Television makes it somewhat easier to present, and for this reason is more favorably considered.

Here, again, is the premise that the teacher with a minimum of staff prepares such "visual aids", and that again costs for material, producers, special teachers, artists and clerical staff are minimized. The increased amount of equipment (film and slide projectors into the television system) can now only be justified on the basis that the students' learning rate is increased.

Moving into the next classification, the total use of the television medium brings with it the need for a special studio, where special lesson formats are developed and assembled, to produce complete lessons adapted to the medium. Here, as before, the justification can only be an increased efficiency in the students' learning rate, through a more thorough use of all the visual and audio aids available, plus a tailor-made approach to presentation.

To achieve this increased efficiency (plus the benefits of increased plant utilization, plus more effective use of teacher time) now requires considerable backup in each of the facilitating areas previously mentioned.

Lesson plans must be re-developed, to utilize the medium.

Graphics and arts specialists now condense 1000 words into the picture that is so much more valuable.

Production staff, and technical operating staff must be considered, as an extension of the teacher who must concentrate on the lesson.

Engineering staff requirements increase, as also do the clerical requirements.

And last, but not least, physical space requirements increase.

Let us try to establish some broad guidelines as to the costs involved in the various approaches.

In assembling our approach, receivers can be considered to cost $.50 per square foot of classroom to be covered. Camera/video tape combinations should cost in the range of $30,000, per class unit. Film/slide units can be considered to be $20,000 per unit.

Space for each Camera/video tape or Film/slide unit should be 200 sq .ft. Studio units can be considered to consist of 1000 sq.ft. blocks, and facilitating systems can be expected to utilize approximately 2 times studio area, or 2000 sq.ft. blocks.

Recurrent annual costs (payrolls for engineering, production, and clerical; building and equipment operation and maintenance; and Instruction Materials) can be considered to cost 50% to 75% of the capital

cost of equipment, with the high figure relating to the more sophisticated approach. Alternatively, where Studio units are considered, equipment costs can be estimated to be $60. per square foot of studio space.

Thus we have:

A. Simple case: Extension of teacher

1 Class area	- (say autitorium 10,000 sq.ft.)	
Reveivers	- 10,000 sq.ft. x .50	$5,000
1 Class Unit		
Camera/video Tape		30,000
Space	200 sq.ft. x $15/sq.ft.	3,000
		$38,000
Annual recurrent costs		
50% of equipment ($35,000)		17,500

B. Intermediate Case: Extension and visual Aid

Previous equipment cost		$35,000
plus 1 Slide/Film Unit		20,000
		$55,000
Space - previous	200 sq.ft.	
- Slide/Film	200 sq.ft.	
	400 sq.ft. x $15/sq.ft.	6,000
		$61,000
Annual Recurrent Costs		
50% of equipment (55,000)		$27,500

C. Complex Case: Full television medium

15 Class areas	- (1200 sq.ft. each)	
Receivers	- 15 x 1200 = 18,000 x $0.50	9,000
1 Auditorium	- (10,000 sq.ft.)	
Receivers	- 10,000 x $.50	5,000
2 Studio Blocks		
Space	- 2 x 1000 sq.ft. x $15/sq.ft.	30,000
Equipment	- 2 x 1000 sq.ft. x $60/sq.ft.	120,000
2 Facilitating Blocks		
Space	- 2 x 2000 sq.ft. x $15/sq.ft.	60,000
		$224,000
Anual Recurrent Costs		
75% of capital cost of equipment ($134,000)		$100,000

In conclusion, while the above figures are substantially correct, they primarily illustrate the order of variation which is generated by the hidden requirements of the use of the tool - and stress the importance of establishing those requirements before the planning goes too far.

Your kind attention, gentlemen, has been very much appreciated.

MR. JOYCE, UNIVERSITY OF CALIFORNIA: This 6 unit that you have set up here, could it be connected without increasing the number of units? What does the unit cost?

MR. GRANT: The cost of 6 unit receivers, connecting classrooms with receivers is not substantial. You will not put in every classroom one camera. You design this so that several classrooms will be able to take advantage of the feed tape. So there will be a reduction.

QUESTION: Does this include the cost of distribution from one building to another?

MR. GRANT: I would have to say no. The cost of distribution has not been stated here because this is variable.

QUESTION: Is there any place wherein you reduce the cost of certain types of buildings, can you reduce classroom space by the use of T.V.?

MR. GRANT: I think yes. But here again there are educators who would not agree. You can increase the utilities factor of the teaching space. If you have too large a class in one room then you have to give two lectures. The first lecture is televised and the second given through the medium of T.V. On that basis you get more utilisation of your plant.

MR. WHITE, UNIVERSITY OF MISSISSIPPI: I would have to say from my own experience of the past year these figures seem very realistic. In our case, the equipment costs and back up space came to $326. an hour.

MR. SIMON, MICHIGAN STATE UNIVERSITY: We have a veterinary school and found that a demonstration in surgery can be better through the medium of T.V. Fifteen or more students can view surgery much better than five or six around a table. I think it can save a substantial amount in certain areas of work.

MR. GRANT: I quite agree. I think there are a number of instances.

MR. MCGUIRE, UNIVERSITY OF MAINE: I wonder if you would comment on the rate of growth of educational T.V. on the college campus. We have heard many figures, will you double in five years or treble in seven years. I wonder if you can help us in this area. Would you care to comment?

MR. GRANT: I can increase some, depending on how effectively used in the first instance. I would say that design capacity should be prepared for double or treble capacity. The designer should make it feasible for two or three times more than the original.

MR. PAUL, UNIVERSITY OF AKRON: Are you in a position to give statistics concerning the number of colleges and universities that are utilizing T.V. in some form or other?

MR. GRANT: I do not have any figures here but I would discuss it later.

MR. ARMOUR: By a show of hands, how many are using T.V. on their campus?

I would like to give a reply to the question. At York University we built a T.V. system costing about $2,500. and we are now in the process of completing a $500,000. installation. This is just in three years.

I would like to thank Mr. Grant. This is a subject of much interest to physical plant personnel, especially since many of us have to instal the facilities and plan for them in new buildings as well as renovate and change existing buildings.